

Cape Canaveral. On the evening of the 1st the pressure at Titusville was 29.72 inches and the 24-hour rainfall 3.34 inches. The storm center was about 25 miles west of Jacksonville at 7 a. m. of the 2d, with a maximum wind velocity at the latter place of 54 miles, and an average hourly movement of nearly 38 miles for the preceding 12 hours. The American steamship *Fann* ran into the storm off Cape Canaveral about 9 a. m., August 1, wind about 60 miles southeast, barometer 29.57 inches. The high winds were confined, as a rule, to the portion of the Peninsula east of the Suwanee River, while damaging rains extended over the triangular area from Pinellas County on the west coast to Jacksonville and Hypoluxo on the east coast, rainfall intensity being greatest apparently at St. Petersburg, where 15.45 inches fell in 24 hours. An electrical disturbance of great intensity was coincident with the heavy rains. The damage was chiefly to railway tracks, bridges, highways, and other such structures. Some buildings were blown down, but no one was reported to have been killed. Crops on lowlands suffered severely, and even those on high ground did not escape the consequence of heavy rains and a prolonged soggy condition of the soil. The area of greatest damage was over portions of Pinellas, Hillsboro, Manatee, De Soto, Polk, Palm Beach, St. Lucie, and Brevard counties. Summarized press reports show that the total damage was not less than \$250,000.

Average accumulated departures for Sept., 1915.

Districts.	Temperature.			Precipitation.			Cloudiness.		Relative humidity.	
	General mean for the current month.	Departure from the current month.	Accumulated departure since Jan. 1.	General mean for the current month.	Departure from the current month.	Accumulated departure since Jan. 1.	General mean for the current month.	Departure from the normal.	General mean for the current month.	Departure from the normal.
	° F.	° F.	° F.	Ins.	Ins.	Ins.	0-10	P. ct.		
New England.....	63.9	+3.2	+9.5	1.07	-2.10	-3.20	4.4	-0.8	71	-10
Middle Atlantic.....	69.5	+3.0	+7.3	2.10	-1.40	-0.90	4.4	-0.3	77	0
South Atlantic.....	75.9	+2.8	+0.4	3.17	-1.80	-5.80	4.4	-0.3	78	0
Florida Peninsula.....	81.7	+0.9	-8.2	4.96	-3.00	-3.70	5.2	-0.2	75	-1
East Gulf.....	78.0	+3.2	+1.0	4.72	+0.80	-3.20	4.4	-0.2	72	-13
West Gulf.....	78.1	+2.4	-5.2	2.76	-0.70	-3.30	4.7	+0.5	72	+4
Ohio Valley and Tennessee.....	65.4	+2.2	-5.4	3.84	+1.30	-1.40	4.5	+0.1	71	+5
Lower Lakes.....	65.3	+2.2	-3.1	3.69	+0.90	+0.10	4.9	+0.1	72	+5
Upper Lakes.....	60.7	+1.5	+3.8	4.42	+1.10	-0.40	5.7	+1.5	82	+5
North Dakota.....	55.3	-1.9	+8.1	1.93	+0.50	-0.60	5.8	+1.4	72	+15
Upper Mississippi Valley.....	66.4	+1.5	-2.9	5.20	+2.30	+0.90	5.4	+1.1	81	+9
Missouri Valley.....	65.7	+0.4	-8.0	4.48	+1.80	+8.50	4.9	+0.9	78	+12
Northern slope.....	54.2	-3.3	-2.1	2.16	-1.10	+2.30	5.9	+1.9	70	+15
Middle slope.....	67.8	+0.3	-12.2	3.11	+1.20	+7.80	4.7	+1.3	71	+13
Southern slope.....	73.5	+0.7	-11.4	3.22	+0.60	+3.40	4.2	+0.4	68	+9
Southern Plateau.....	72.1	-1.4	-17.2	0.19	0.00	+1.50	2.0	-0.5	48	+5
Middle Plateau.....	60.9	-1.4	-2.9	0.88	+0.20	-0.40	2.9	0.0	41	+3
Northern Plateau.....	59.5	-1.7	+12.8	0.72	-0.10	+0.20	4.6	+1.0	47	+5
North Pacific.....	57.8	+0.9	+20.3	0.87	-1.60	-7.70	5.5	+0.2	79	+7
Middle Pacific.....	63.3	-0.1	+6.6	0.02	-0.50	+4.20	2.2	-1.2	59	-4
South Pacific.....	67.9	+0.6	+10.8	T.	-0.20	+3.70	2.4	-0.2	68	+2

Maximum wind velocities, Sept., 1915.

Stations.	Date.	Velocity.	Direction.	Stations.	Date.	Velocity.	Direction.
		Mis./hr.				Mis./hr.	
Block Island, R. I.	26	60	nw.	New York, N. Y.	17	72	w.
Do.	27	60	nw.	Do.	21	58	nw.
Buffalo, N. Y.	21	50	nw.	Do.	26	72	nw.
Do.	26	72	sw.	Do.	27	54	nw.
Burlington, Vt.	26	50	nw.	Pensacola, Fla.	29	60	so.
Duluth, Minn.	25	50	nw.	Do.	30	64	s.
Green Bay, Wis.	8	54	sw.	Point Reyes Light, Cal.	12	55	nw.
Mobile, Ala.	29	61	se.	Do.	13	54	nw.
Mount Tamalpais, Cal.	12	64	nw.	Do.	22	50	nw.
Do.	13	56	nw.	Do.	23	72	nw.
Do.	17	60	nw.	Do.	24	57	nw.
Do.	18	59	nw.	Portland, Me.	27	50	nw.
Do.	19	50	n.	Providence, R. I.	26	62	nw.
Do.	23	80	nw.	Sandy Hook, N. J.	26	51	nw.
Do.	24	57	nw.	Sand Key, Fla.	3	54	se.
Nantucket, Mass.	26	59	sw.	Do.	27	58	se.
New Orleans, La.	29	86	sw.	Toledo, Ohio	10	52	w.

# WEATHER CONDITIONS OVER THE NORTH ATLANTIC DURING SEPTEMBER, 1914.

P. C. DAY, Climatologist and Chief of Division.

The data presented are for September, 1914, and comparison and study of the same should be in connection with those appearing in the REVIEW for that month. The accompanying Chart IX (XLIII-111) shows for September, 1914, the averages of pressure, temperature, and the prevailing direction of the winds, together with the location and course of the more severe storm tracks of the month. During the month as a whole the distribution of mean atmospheric pressure over the greater part of the ocean was similar to the normal as shown on the Meteorological Chart of the North Atlantic Ocean for September. The Azores high was of normal intensity and position, but of slightly less area than usual. The center of the Icelandic low is not shown on account of lack of observations, but as far as can be judged, it was probably some distance southwest of its normal position. The variations in pressure were marked during the month over the northeastern part of the ocean, as off the west coast of Scotland the barometer readings varied from 29.21 inches on the 14th to 30.40 inches on the 29th, while in the central and southern portions the range was much less. Only two storm tracks could be shown, although on several days disturbances occurred, accompanied by heavy winds, whose centers it was impossible to plot, due to want of data.

On September 2 the British steamship *Megantic* reported a northwest gale of 56 miles an hour, barometer reading of 29.29 inches at latitude 54° N., longitude 48° W., the vessel being about 3° south of the apparent center of the low. By the following day this disturbance was central near latitude 53° N., longitude 37° W., west and northwest winds of 48 miles being reported, and on September 4 and 5 the track of the low could be traced in its easterly movement, as on the latter date the center was near latitude 51° N., longitude 21° W., while the wind had decreased to a moderate breeze and the barometer risen to 29.80 inches. On September 17 a low appeared near latitude 47° N., longitude 41° W., several vessels reporting winds of from 48 to 56 miles an hour. By the 18th it had moved in a westerly direction to latitude 45° N., longitude 49° W., the velocity of the wind remaining about the same. From this point the storm recurved, and on the 19th was central near latitude 47° N. and longitude 45° W., the wind having decreased in violence. By the 20th it had apparently moved some distance to the northward, and while it was impossible to plot the center on account of the lack of observations, a vessel near latitude 50° N., longitude 40° W., reported a northwest wind of 54 miles an hour, the barometer reading 29.50 inches. This is shown as track I on Chart No. 9. On September 24 a low of comparatively light intensity appeared near Pensacola, Fla. This moved slowly along the coast, and on the 25th the center was near Charleston, but the wind still remained light. From this point the storm increased in intensity and in rate of movement, and on September 26 was near latitude 40° N., longitude 68° W. On the 27th it was near latitude 51° N., longitude 50° W., having decreased in intensity, and by the 28th had moved off the limits of the chart. This is shown as track II on Chart No. IX.

*Fog.*—Observations of fog in September for the 6-year period 1901 to 1906, as given on the Meteorological Chart of the North Atlantic Ocean for September, show that the greatest percentage of days for the above period on which fog was observed occurred in the vicinity of the Banks of Newfoundland, the center of the area being near latitude 47° N., longitude 48° W. Here the percentage was given

as from 30 to 35, while for September, 1914, in the five-degree square from latitude  $45^{\circ}$  to  $50^{\circ}$  N. and longitude  $45^{\circ}$  to  $50^{\circ}$  W. fog was observed on 8 days, or a percentage of 27. The normal percentage for the square from latitude  $45^{\circ}$  to  $50^{\circ}$  N. and longitude  $25^{\circ}$  to  $30^{\circ}$  W. varies from 20 to 25, while for the month under discussion it was only 10. In the square from latitude  $55^{\circ}$  to  $60^{\circ}$  N. and longitude  $15^{\circ}$  to  $20^{\circ}$  W. it was 3 and the normal 5, showing that taken as a whole the amount of fog along the northern sailing routes was somewhat below the normal.

**Temperature.**—The temperatures were very generally above normal over the North Atlantic during the month, with the greatest positive departures along the European coast where they ranged from  $+6^{\circ}$  off the coast of Scotland to  $+2^{\circ}$  at the thirtieth parallel of latitude. Over the waters adjacent to the American coast the departures were less and over the adjacent land areas they varied from  $+2.5^{\circ}$  at Eastport to  $-0.3^{\circ}$  at New York,  $-2.3^{\circ}$  at Atlantic City,  $-2.7^{\circ}$  at Hatteras,  $-0.1^{\circ}$  at Jacksonville, and  $-0.5^{\circ}$  at Key West. There was as usual rain nearly every day over some portions of the trans-Atlantic routes, though no hail or snow was reported during the month.

#### A PACIFIC HURRICANE OF SEPTEMBER, 1915.

By JAMES H. KIMBALL, Observer.

[Dated: Weather Bureau, Marine Center, New York, N. Y., Oct. 22, 1915.]

Violent storms occurring in the tropical waters of the Pacific Ocean adjacent to the North American Continent are so infrequent that in the preparatory discussion of a large number of observations gathered from that section none in the past five years indicates sufficient storm development to warrant tracing on the Pilot Charts of the United States Hydrographic Office. True, there have been in recent times a few disturbances that have had their inception somewhat to the east of the Hawaiian Islands, whence they swept northwestward, recurving near Japan and afterwards following the usual storm track leading to Alaska.

Well to the east of the Hawaiian Islands lies the region of el Cordonazo de San Francisco,<sup>1</sup> the fanciful name given by the Spaniards to the violent winds that occur on the west coast of Mexico, one in every seven or eight

years, toward the close of the rainy season; that is, about the time of St. Francis's Day, October 4. These storms attain hurricane force, and the observations that follow seem to furnish measurements of one of them.

While the storm experienced by the *Calliope* does not appear to have had sufficient strength to insure its passage westward to the region of storm inception lying near the Hawaiian Islands, still the suggestion is inevitable that future observations may show that a storm track crosses the Pacific from Mexico to Japan.

*Extract from meteorological log of steamship Calliope, Capt. Chas. E. Topp, Honolulu to Panama, September 4-5, 1915.*

- Sept. 4. 2 P. M. Freshening wind from north and backing to NNW.; barometer, 29.90 inches; deep NE. swell.  
6 P. M. Strong northerly wind; rising sea; squally.  
8 P. M. Fresh NNE. gale; squalls increasing in force and more frequent; heavy rain; barometer, 29.70 inches.  
11 P. M. Whole gale from NNE., heavy sea and fierce squalls; barometer 29.50 inches.  
Midnight. No change in weather.
- Sept. 5. 2 A. M. Wind suddenly fell to almost a calm and sea falling rapidly; heavy frequent lightning from the south.  
2 to 3 A. M. Light wind gradually hauling from NNE. through east to south.  
3:15 A. M. Wind blowing from the south a whole gale; sea rose very quickly from that quarter; also very heavy rain squalls. When wind shifted the barometer started to rise almost as rapidly as it had fallen. Wind blew steadily from s. to ssw., and the weather gradually moderated so that I was able to keep away on my course at 6 P. M. Previous to this was hove to and going half speed. During the early hours of the morning of the 5th had tarpaulins ripped off some of the hatches.—Chas. E. Topp.

On the 5th, at 2 A. M. (lat.  $15^{\circ} 40'$  N. and long.  $109^{\circ} 40'$  W.), with the wind NNE. and force 10 the barometer fell to its lowest reading for the storm, viz, 29.30 inches. Shortly afterwards the wind fell suddenly to the calm as mentioned in the second paragraph of the report.

From the above report it appears that a well-formed vortex of moderate violence prevailed on September 4-5, 1915, about 500 miles south of the most southerly point of Lower California and slightly nearer in a northeasterly direction to Colima, Mexico. The storm, when observed by Capt. Topp, passed close to the position of his ship and was traveling from southeast to northwest.

Unfortunately there were but few readings of the barometer taken, but their number is sufficient to show a moderate though uniform gradient of a vortex having a large diameter at its lowest level.

<sup>1</sup> See this REVIEW, November, 1895, 28: 425.